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d) at least one pair pillar, wherein the pillar comprises a first section and a second section, wherein the first section is connected to the floor frame and the second section is connected to the ceiling frame;

wherein the sections are interconnected by the use of a transverse bearer and pins.

NAB
(M) JPC

REMARKS

Review and reconsideration of the Office Action of October 03, 2001, is respectfully requested in view of the above amendment and following remarks.

Claims have been amended to overcome all the formalities rejections.

Claims 1 and 15 have been canceled. Claim 20 has been added. Claim 20 corresponds to canceled Claim 1.

Applicant has made corrections to the original Figures 1, 4, and 5 to overcome the rejection on Claim 6. The drawing corrections include adding:

reference number 11 designating a junction gusset.

The changes are indicated in red ink. Approval of the proposed drawing changes is respectfully requested.

Care has been taken to ensure that no new matter is added to the claims.

The only reference that the Examiner applied to the present invention is Parisien. (Obviousness rejection). After reviewing the reference, Applicant notes that the Parisien reference solely concerns the addition of porches, stairways and balconies to an existing façade. The present invention concerns three-dimensional elements (modules) of a building, which are prefabricated in a

factory and mounted at the building site in order to form an entire house.

The modules are fully equipped in the factory, walls are finished, electrical and sanitary equipment are installed, and the floor covering is laid, thus the house is ready for occupation.

The present invention differs substantially from the cited reference as far as the basic conception and the interconnection of the modules.

The present invention requires a sturdy steel construction, and the cited reference requires light construction composed of aluminum.

The elements of the present application are pre-fabricated in a factory in such a way that they only need to be superposed and interconnected at the building site.

The interconnection between the sections ensures an accurate vertical and horizontal building structure through a SIMPLE plug connection. The pins vertically connect the sections of the pillars of two superposed modules and guide the modules when mounted one on top of the other. The pins determine the alignment and precise distance of the superposed module from the module below.

The cited prior art fails to teach that the sections are interconnected by the use of a transverse bearer and pins as required by Claim 20.

Present Invention

First, Applicant discusses the basis for, and the distinguishing features of, the present invention.

The traditional building methods of erecting houses and buildings consist in the use of building materials along on-site labor. Some of the problems presented by these methods are that: 1) requires expensive labor time for the production of building components; 2) requires high transportation costs for the materials and the works at site; 3) it is a time-consuming process; and 4) a lot of labor time is lost because of the weather; and administration.

After extensive searching, Applicant surprisingly found that the basic construction, exterior and interior walls, fittings and interior finishing, as well as the roof coverings, doors and windows can be prefabricated in modules ready for use and then transported to the building site.

The inventor overcame the problems presented by the traditional method of construction by providing prefabricated buildings or houses made by a modular steel frame construction method, the construction method comprising the combination of:

- a) a ceiling frame,
- b) a floor frame ;
- c) Z-shaped sections welded inside the floor frame; wherein the Z-shaped sections form flanges; and
- d) at least one pair pillar, wherein the pillar comprises a first section and a second section, wherein the

first section is connected to the floor frame, and the second section is connected to the ceiling frame;

wherein the sections are interconnected by the use of a transverse bearer and pins. (Claim 20)

The shape of the sections is an important point of the invention because the Z-shaped sections form flanges on the floor, which allow filling the incurved part of the flanges with concrete and avoiding the use of reinforcement elements.

The interconnection between the sections ensures an accurate vertical and horizontal building structure through a simple plug connection. The pins vertically connect the sections of the pillars of two superposed modules and guide the modules when mounted one on top of the other. The pins determine the alignment and precise distance of the superposed module from the module below.

The combination between floor frame (1) Z-shaped sections (2) as a flange and floor layer (3) generates a solid layer with great bending strength, an excellent oscillation frequency, a fire protection value of F 90, and a high air sound insulation measurement.

Office Action

Turning now to the Office Action in greater detail, the paragraphing of the Examiner is adopted.

Paragraph 1 (Formalities)

The Examiner rejects Claims 1-19 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Regarding Claim 1, lines 7-9, the Examiner has indicated that the terminology "the pillar being connected to the floor frame (1) and the ceiling frame (6) by the use of a traverse bearer (7)", is unclear because the drawings/specification do not disclose the twin pillars connected to element (7).

In response, Applicant has amended the claim to overcome the rejection.

Applicant would like to point out to the Examiner that Fig. 5 shows the element 7 connected to the pillars 4.

Applicant is also submitting proposed drawings changes. Reference number 4 has been added to the second pillar on Figs. 1, 4, and 5.

Regarding Claim 2, line 4, and Claim 5, line 4, the Examiner has indicated that the phrase "and/or" is unclear.

In response, Applicant has amended the claim to overcome the rejection.

Regarding Claim 4, lines 4 and 6, the Examiner has indicated that the term "d" is unclear.

In response, Applicant would like to point out to the Examiner that during the English translation of the German application, the term "d" was maintained to be concise with the German Application.

The term "d" refers to "thickness" as can be seen from page 4, lines 13-18, of the specification of the present invention.

Finally, the Examiner has indicated that Claim 15 is missing.

In response, Applicant has canceled Claim 15.

Accordingly, withdrawal of the rejections is respectfully requested.

Paragraph 3 (Drawings)

The Examiner objects to the drawings because the drawings must show Claim 6 or the feature(s) canceled from the claims.

In response, Applicant submits herewith proposed drawings changes. Reference number 11 has been added to Figures 1, 4, and 5. Reference number 11 corresponds to the junction gussets.

Applicant reviewed the drawings and note that figures 1, 4, and 5 include the junction gussets elements, but reference numbers were not assigned.

The specification has been amended accordingly.

Accordingly, withdrawal of the objection is respectfully requested.

Paragraphs 4-5 (Obviouness)

The Examiner rejects Claims 1-19 under 35 U.S.C. 103(a) as being obvious over Parisien.

According to the Examiner, in Figures 2-3, Parisien teaches a frame comprising: a ceiling, a floor, a metal section welded inside the floor frame; a floor frame; and a pillar connected to the floor frame and ceiling frame by using pins. The floor is constructed of Portland cement.

The Examiner has indicated that the reference fails to teach the metal section to have a Z-shape and the presence of a second pillar.

According to the Examiner, it would have been obvious to one of ordinary skill in the art to select a z-shaped section based on the design criteria, and the selection of a known and appropriate section is given little patentable weight.

Regarding Claims 2, 5, 8, 10-11, and 13, the Examiner has indicated that the specific steel sections being claimed are given little patentable weight because they only reinforce the Examiner's position that the selection of an appropriate element involves only ordinary skill in the art.

Regarding Claims 14, 16, and 17-19, the Examiner has indicated that the claimed subject matter would be a matter of obviousness to one having ordinary skill in the art.

Applicant respectfully traverses.

Applicant reviewed the reference and note that compared with Claim 20, the reference fails to teach: a) **Z-shaped** sections welded inside the floor frame; b) the Z-shaped sections form flanges; c) the pillars comprise a first section and a second section, wherein the first section is connected to the floor frame and the second section is connected to the ceiling frame; d) the sections are interconnected by the use of a transverse bearer and pins.

Regarding a-b

The shape of the sections is an important point of the invention because the Z-shaped sections form flanges on the floor, which allow filling the incurved part of the flanges with concrete and avoiding the use of reinforcement elements.

The particular shape of an article of manufacture can impart patentability thereto when the shape results in a product

distinctly different than that of the prior art. Ex parte Hilton
(POBA 1965) 148 USPQ 356.

Regarding c-d

Applicant would like to point out to the Examiner that the pin is one of the basic components of the invention, because it provides a fast and precise interconnection of the modules when mounted at the building site.

The present invention requires a sturdy steel construction, and the cited reference requires light construction composed of aluminum.

The elements of the present application are pre-fabricated in a factory in such a way that they only need to be superposed and interconnected at the building site.

The interconnection between the sections ensures an accurate vertical and horizontal building structure through a simple plug connection. The pins vertically connect the sections of the pillars of two superposed modules and guide the modules when mounted one on top of the other. The pins determine the alignment and precise distance of the superposed module from the module below.

The use of sections that interconnect will allow serial production modules that will provide housing at a very competitive price.

The Parisien reference uses a different mode of interconnection (bolts and screws) as can be seen from Figs. 3-5, elements 20, 48, 58, and 60. A bolt or screw is structurally different from a pin.

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Thus, the reference fails to teach all the limitations of the present invention.

Accordingly, withdrawal of the rejection is respectfully requested.

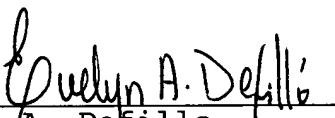
Paragraph 7

The Examiner states that all other prior art made of record is considered pertinent to Applicant's disclosure, but is not applied against the claims.

Applicant has no further comments on the remaining references.

Favorable consideration and early issuance of the Notice of Allowance are respectfully requested. Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

Respectfully submitted,


Evelyn A. DeFillo
Registration No. 45,630

PENDORF & CUTLIFF
P.O. Box 20445
Tampa, FL 33622-0445
(813) 886-6085

Date: April 3, 2002

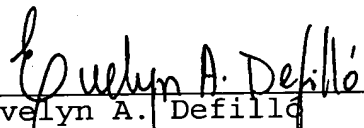
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CERTIFICATE OF MAILING AND AUTHORIZATION TO CHARGE

I hereby certify that the foregoing AMENDMENT A, Proposed Drawings Changes, and Petition for Three Months' Extension of time for U.S. Application No. 09/529,374 filed April 12, 2000, was deposited in first class U.S. mail, postage prepaid, addressed: Attn: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on April 3, 2002.

The Commissioner is hereby authorized to charge any additional fees, which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account No. 16-0877.



Evelyn A. DeFillio

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VERSION WITH MARKINGS TO SHOW CHANGES MADE HEREBY ATTACHED

The Examiner is requested to accept the marked-up version as it is based on the previous version, which when modified as below, produces the clean version submitted with the current amendment.

IN THE DRAWINGS

Please replace the enclosed Figures 1, 4, and 5 for the original Figures 1, 4, and 5.

IN THE SPECIFICATION

On page 4, please amend the paragraph beginning at line 13 to read as follows:

The twinned pillars (4) for their part are welded to the floor frame (1) and the ceiling frame (2) with the help of junction gussets (11) absorbing and transmitting the shearing force of the building. The number of twinned pillars required is determined by the statics.

IN THE CLAIMS

Please cancel claims 1 and 15 and amend the claims as follows:

2. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method according to claim [1] 20, wherein [substantiated by the fact that] the floor frame

comprises [(1) consists of] a standardized steel section C 160, St 37 or St 52 and at least one [or/and] other possible section[s], wherein the section [and that it] is bevelled and welded.

3. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the [Z-sections (2) as] flanges [or stays] are welded on the inside of the floor frame [(1)]in a well-defined axial distance in order to fill the incurved part of the flange with concrete without reinforcing the latter.

4. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the floor layer [(3)] consists of concrete having a "d" of at least 100 mm [,d = at minimum 100 mm or more], and undermost of an insulating layer of pressed rockwool or a similar insulation material having a "d" of at least 60 mm , [d = at minimum 60 mm or more, that] wherein the floor layer [(3)] is mounted between the flanges [(2)] and that it is covered, without being reinforced, with B 25 or a concrete of superior proficiency grade.

5. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20 , wherein [substantiated by the fact that] the [twinning pillar(4)] sections of the pillar consists of [two] MSH sections 60/60/5, St 37 or St 52 [and/or] and at least one other conceivable sections and that they are interconnected by welded

steel bridges 80/80/10 or other variants in dependence of the chosen section, and in an axial distance from each other conforming to the statics specifications.

6. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the [twinned pillar] sections are [(4) is] connected to the floor frame [(1)] and the ceiling frame [(6)] through junction gussets in conformity with statics specifications.

7. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the number of [them twinned] the pair of pillars [(4)] is determined by statics requirements.

8. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the pins [(5)] consist of solid turned bars of St 37 or other conceivable materials, and that they are used for connecting vertically the sections of the [twinned] pillars [(4)] of two modules placed one on top of another.

9. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the combination of the [twinned] sections of the pillars [(4)] with the pins [(5)]

ensures the] provides accurate vertical and horizontal structure of the building by means of a simple plug-in connection.

10. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the ceiling frame [(6) consists of] comprises an L-shaped sheet-steel section, St 37 or 52 or of other conceivable materials or sections.

11. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the ceiling frame [(6)] consists of an edged or rolled L-section 250/75/5 or other conceivable sections.

12. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the frames [(1)] [and (6)] are beveled and welded at their angles or corners.

13. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, further including [substantiated by the fact that] C 60, C 80 or other sections [(transverse bearer) (7) are] welded into the ceiling frame [,] perpendicular to its longitudinal direction and in an axial distance depending upon statics specifications.

14. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim

[1] 20, [substantiated by the fact that] wherein the combination of the ceiling frame [(6)] with the floor frame [(1)] generates a twinned beam [(9)] allowing a cantilever span of up to 14 m.

16. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that the] further including at least a pair of [twinned] beams [(9) are] interconnected either by screw-bolts or through welding, the method of interconnection depending upon the cantilever span.

17. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that a] wherein the combination of the roof frame [(10)] with the floor frame [(1)] and the transverse bearers [(7)] is practicable.

18. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein the [finished] modules [(8)] are connected, mounted and rabbeted accordingly at the building site.

19. (Twice amended) Prefabricated buildings or houses according to a modular steel frame construction method as claimed in claim [1] 20, [substantiated by the fact that] wherein [it is possible to build] the buildings or houses can be built include [with a variable number of] several stories.

Please add the following claim:

4,344,542- 20. Prefabricated buildings or houses made by a modular steel frame construction method, the construction method comprising the combination of:

a) a ceiling frame,

b) a floor frame ;

c) Z-shaped sections welded inside the floor frame;
wherein the Z-shaped sections form flanges; and

d) at least one pair pillar, wherein the pillar comprises a first section and a second section, wherein the first section is connected to the floor frame and the second section is connected to the ceiling frame;

wherein the sections are interconnected by the use of a transverse bearer and pins.--

112# NAB IN SPEC

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